AMSAT News Service Weekly Bulletins
Issue: ANS-251
Date: 1990-09-08
Sources: amsat-ans-1990-ans-251.01.txt

SB ALL @ AMSAT $ANS-251.01
STS-35/SAREX LAUNCH DELAYED

HR AMSAT NEWS SERVICE BULLETIN 251.01 FROM AMSAT HQ
SILVER SPRING, MD SEPTEMBER 8, 1990
TO ALL RADIO AMATEURS BT

STS-35/SAREX Mission Delayed Due To Hydrogen Leak

NASA officials have informed AMSAT-NA SAREX personnel that the launch of STS-35 has been further delayed due to a small hydrogen leak in the aft Shuttle engine compartment. Although a smaller leak this time than the one which caused a roll-back of the Shuttle Columbia several months ago, technicians found that the concentration of 6,000 parts/millon of hydrogen in the engine compartment was enough to cause concern to delay the launch and begin repair operations. All radio amateurs who have been looking forward to this exciting mission are asked to have a little more patience while these "pesky" leaks are being fixed. According to NASA officials, the earliest the Shuttle Columbia can be ready for lift-off is September 17, 1990. All SAREX operating times are based on Mission Elapse Time (MET). So regardless of the launch date, operating schedules found in past ANS bulletins and in W1AW bulletins will still hold. Amateurs will just need to recompute the time based on the new lift-off time. Likewise, all operating frequencies for the SAREX packet radio robot operations will remain the same. However, as the STS-35 launch approaches again, this pertinent information will be repeated. Please stay tuned to AMSAT HF/VHF Nets and AMSAT News Service (ANS) bulletins for further updates on the launch of STS-35. Also, W1AW will be providing updates on the launch during its daily CW and Voice bulletins.
/EX
SB ALL @ AMSAT $ANS-251.02
FO-20 IRREGULAR TRNSPNDR OPS

HR AMSAT NEWS SERVICE BULLETIN 251.02 FROM AMSAT HQ
SILVER SPRING, MD SEPTEMBER 8, 1990
TO ALL RADIO AMATEURS BT

Fuji-Oscar 20 Experiencing Temperature Problems

JAMSAT reports that since emerging from an eclipsing period in late August, FO-20 command stations have been having difficulty controlling the temperature aboard FO-20. Battery temperature had risen to over 40 deg. C when mode-JA and JD in simultaneous operation. Even after turning off both transponders last week, the temperature of the was still at 35 deg. C. If the batteries are left at these elevated temperatures for any prolonged period of time, it significantly reduces the battery life. (As a point of reference, the Microsat Battery temperatures typically hover around 0 to 5 deg. C.)

While the command station is collecting data on this problem and works on a solution, it can be expected that FO-20 will not be on any sort of regular operating schedule.
/EX
SB ALL @ AMSAT $ANS-251.03
PACSAT BBS INFO, PART I

HR AMSAT NEWS SERVICE BULLETIN 251.03 FROM AMSAT HQ
SILVER SPRING, MD SEPTEMBER 8, 1990
TO ALL RADIO AMATEURS BT

NK6K Provides Answers About Future PACSAT BBS Operations, PART I

AMSAT-NA Area Coordinator Jim White (WD0E) has asked some questions that are probably of general interest to OSCAR satellite users about the PACSATs and AMSAT software engineer, Harold Price (NK6K), has responded with the following answers.
WD0E: "Which PACSAT will commence BBS operations first?"

NK6K: "UO-14 is now about 80% functional with the BBS software. AO-16 will be brought to that level, then LO-19.

WD0E: "Will the TLM or Whole Orbit Data (WOD) format, frequency or any other parameters change?"

NK6K: "This is more of a spacecraft control than an application question. There is nothing in the new code that will require a change. WOD will probably end up as files, and be downloaded or broadcastable. This means that it won't come down in frames sent to WOD, but the internal record format will be the same. I'd like to see some compression on the WOD, but we may be running out of code space. If it is compressed, the groundstation software will know how to decompress it. We'll do a update to the Operating System runtime libraries next year that will give us back some program memory. There would be no frequency changes."

WD0E: "Will people still be able to just digipeat through the PACSATs?"

NK6K: "This has not yet decided. Digipeating is a good way to check out your station. I don't think there is much other demand for it in the long run, The MICROSATs are available now for digipeating, but you don't see much of this type of activity. I would not want to see digipeating supplant the intended use of store-and-forward data, but if there is a big demand I suspect it would be addressed."

WD0E: "How will the "user" ground software be distributed and tested?"

NK6K: "Jeff Ward (G0/K8KA) and I have discussed two approaches. However, nothing has been finalized. The first approach is to make a minimum implementation of the user ground-based software available, including C language source code, as shareware. We want to get something out soon, and, since Jeff and I are IBM PC-based, availability of code will hopefully encourage others to write for MAC, Amiga, C-64, Unix, and others. The only downside is we don't want to leave the impression that all AMSAT offerings are shareware. The minimum implementation will not be automated, and will not be pretty (colors, windows, pulldown menus, etc.) but will be more portable. The second approach is for AMSAT-NA and AMSAT-UK make available an "all-singing-all-dancing" PACSAT groundstation program. This will be auto-mated, easily interfaced to terrestrial BBSs, and will have a fancy menu driven format. No source."
/EX
SB ALL @ AMSAT $ANS-251.04
PACSAT BBS INFO, PART II

HR AMSAT NEWS SERVICE BULLETIN 251.04 FROM AMSAT HQ
SILVER SPRING, MD SEPTEMBER 8, 1990
TO ALL RADIO AMATEURS BT

NK6K Provides Further Answers About Future PACSAT BBS Operations, PART II

WD0E: "How will WOD dumps and BBS output be interleaved on the downlink?"

NK6K: "The broadcast protocol provides for demuxing broadcast files. This is probably how WOD will be done. These frames are sent to the address QST-1. Direct connect BBS file transfer is done in frames sent to the user's

address. The broadcaster controls the repetition rate for simultaneous broadcast files, based on the number of user's requesting a file, or the file's priority. The method for prioritizing broadcast vs. direct connect (FTL0) is To Be Determined."

WD0E: "How will people know the BBS is running and available? Will they be able to tell by looking with an ASCII terminal program, with TLMDC or similar or will they have to have the ground software to tell?"
NK6K: "Much ado will be made. Also, you'll see frames sent to QST-1 with a PID of BBS."

WD0E: "Will the user ground software be available before the BBS in the bird is turned on?"

NK6K: "Available, yes. Widely distributed? No. We have to have it running on the air to give it a good test, but don't want to subject it to simultaneous connects on the first day. Once a week's worth of testing by users has been successful, the shareware will be placed on Compuserve and elsewhere."

WD0E: "Will you be testing BBS and ground software together for a time prior to making ground available? How will people know that is happening?"

NK6K: "Yes, we will. This is happening as we speak on UO-14. People will learn the same way as always, via official AMSAT Nets and publications."

It is hoped that these answers from NK6K will give radio users a further understanding about the PACSAT user BBS software.
/EX
SB ALL @ AMSAT $ANS-251.05
OPERATIONS NET SCHEDULE

HR AMSAT NEWS SERVICE BULLETIN 251.05 FROM AMSAT HQ
SILVER SPRING, MD SEPTEMBER 8, 1990
TO ALL RADIO AMATEURS BT

AMSAT-NA Operations Net Schedule Announced

AMSAT Operations Nets are planned for the following times. Mode B nets are conducted on an AO-13 downlink frequency of 145.950. Mode J/L nets are conducted on an AO-13 downlink frequency of 435.970.

Date	Phs	mode	UTC	NCS	Backup	U.S. day
18 Sep 90	172	J/L	0040	WA5ZIB	WB6LLO	Monday
28 Sep 90	171	J/L	0100	KA5SMA	N5BF	Thursday
9 Oct 90	172	J/L	0015	WD0E	WB9ANQ	Monday

For information on the amateur satellite program and how you can participate, contact AMSAT-NA at P.O. Box 27, Washington, DC 20044, phone (301) 589-6062, or contact your local AMSAT Area Coordinator.
/EX
SB ALL @ AMSAT $ANS-251.06
AO-13/AO-10 TRANSPONDER SKED

HR AMSAT NEWS SERVICE BULLETIN 251.06 FROM AMSAT HQ
SILVER SPRING, MD SEPTEMBER 8, 1990
TO ALL RADIO AMATEURS BT

A new Transponder Schedule for AO-13 was put into effect on September 8.

Mode S operation has been eliminated for the time being since relatively poor solar panel illumination does not allow sufficient power for proper battery

maintenance during Mode S and S/B periods.

The present transponder schedule for AO-13 is as follows:

Mode-B : MA 003 to MA 165
Mode-JL : MA 165 to MA 195
Mode-B : MA 195 to MA 240
Off : MA 240 to MA 003 (Mode B Beacon On)
Omni Antennas : MA 240 to MA 060
The September 10 attitude estimate is:
BLON = 205 and BLAT = -7

AMSAT-OSCAR-10 appears NOT TO have been receiving sufficient solar panel illumination to support Mode-B transponder operations. Both beacon and transponder signals started showing signs of FMing. Therefore, until further notice please DO NOT use AO-10's transponder.

It is expected that AO-10 may once again receive sufficient solar illumination to support Mode-B transponder operation by sometime in November.
/EX
SB ALL @ AMSAT $ORBS-251.O
Orbital Elements 251.OSCAR

HR AMSAT ORBITAL ELEMENTS FOR OSCAR SATELLITES
FROM N3FKV HEWITT, TX SEPTEMBER 8, 1990
TO ALL RADIO AMATEURS BT

Satellite: AO-10
Catalog number: 14129
Epoch time: 90238.61357863
Element set: 547
Inclination: 26.0406 deg
RA of node: 187.8479 deg
Eccentricity: 0.5952609
Arg of perigee: 170.7338 deg
Mean anomaly: 209.0516 deg
Mean motion: 2.05880945 rev/day
Decay rate: -1.40e-07 rev/day^2
Epoch rev: 5418

Satellite: UO-11
Catalog number: 14781
Epoch time: 90248.58465124
Element set: 776
Inclination: 97.9445 deg
RA of node: 298.4935 deg
Eccentricity: 0.0012840
Arg of perigee: 357.8666 deg
Mean anomaly: 2.2471 deg
Mean motion: 14.65634608 rev/day
Decay rate: 1.795e-05 rev/day^2
Epoch rev: 34774

Satellite: RS-10/11
Catalog number: 18129
Epoch time: 90248.01674093
Element set: 310
Inclination: 82.9217 deg
RA of node: 269.5464 deg
Eccentricity: 0.0010380
Arg of perigee: 255.9239 deg
Mean anomaly: 104.0775 deg
Mean motion: 13.72106928 rev/day
Decay rate: 2.12e-06 rev/day^2

```
Epoch rev:           16039

Satellite: AO-13
Catalog number: 19216
Epoch time:      90233.10507939
Element set:     144
Inclination:       56.9230 deg
RA of node:       139.8507 deg
Eccentricity:    0.7012370
Arg of perigee:   234.0055 deg
Mean anomaly:      39.5251 deg
Mean motion:    2.09695679 rev/day
Decay rate:       1.46e-06 rev/day^2
Epoch rev:            1676

Satellite: FO-20
Catalog number: 20480
Epoch time:      90237.47999198
Element set:     102
Inclination:       99.0343 deg
RA of node:       270.8937 deg
Eccentricity:    0.0540177
Arg of perigee:   251.6210 deg
Mean anomaly:     102.5464 deg
Mean motion:   12.83159072 rev/day
Decay rate:       1.10e-07 rev/day^2
Epoch rev:            2563
/EX
SB ALL @ AMSAT $ORBS-251.D
Orbital Elements 251.MICROS

HR AMSAT ORBITAL ELEMENTS FOR THE MICROSATS
FROM N3FKV HEWITT, TX  SEPTEMBER 8, 1990
TO ALL RADIO AMATEURS BT

Satellite: UO-14
Catalog number: 20437
Epoch time:      90247.73613164
Element set:     203
Inclination:       98.6920 deg
RA of node:       323.5953 deg
Eccentricity:    0.0010783
Arg of perigee:   285.7121 deg
Mean anomaly:      74.2846 deg
Mean motion:   14.28702551 rev/day
Decay rate:       6.25e-06 rev/day^2
Epoch rev:            3222

Satellite: AO-16
Catalog number: 20439
Epoch time:      90244.42881742
Element set:     105
Inclination:       98.6999 deg
RA of node:       320.4480 deg
Eccentricity:    0.0010735
Arg of perigee:   295.6429 deg
Mean anomaly:      64.3635 deg
Mean motion:   14.28801476 rev/day
Decay rate:       6.24e-06 rev/day^2
Epoch rev:            3175

Satellite: DO-17
Catalog number: 20440
Epoch time:      90244.42236293
```

```
Element set:     114
Inclination:       98.7005 deg
RA of node:       320.4573 deg
Eccentricity:    0.0011018
Arg of perigee:   296.3190 deg
Mean anomaly:      63.6848 deg
Mean motion:   14.28851493 rev/day
Decay rate:       6.66e-06 rev/day^2
Epoch rev:            3175

Satellite: WO-18
Catalog number: 20441
Epoch time:      90244.68652978
Element set:     108
Inclination:       98.7001 deg
RA of node:       320.7491 deg
Eccentricity:    0.0011535
Arg of perigee:   295.1838 deg
Mean anomaly:      64.8146 deg
Mean motion:   14.28943119 rev/day
Decay rate:       6.12e-06 rev/day^2
Epoch rev:            3179

Satellite: LO-19
Catalog number: 20442
Epoch time:      90243.62556929
Element set:     110
Inclination:       98.7011 deg
RA of node:       319.7147 deg
Eccentricity:    0.0011883
Arg of perigee:   298.9505 deg
Mean anomaly:      61.0485 deg
Mean motion:   14.29011597 rev/day
Decay rate:       6.00e-06 rev/day^2
Epoch rev:            3164
/EX
SB ALL @ AMSAT $ORBS-251.M
Orbital Elements 251.MISC

HR AMSAT ORBITAL ELEMENTS FOR MANNED AND MISCELLANEOUS SATELLITES
FROM N3FKV HEWITT, TX  SEPTEMBER 8, 1990
TO ALL RADIO AMATEURS BT

Satellite: SALYUT 7
Catalog number: 13138
Epoch time:      90248.72318842
Element set:     484
Inclination:       51.5986 deg
RA of node:       254.5411 deg
Eccentricity:    0.0001817
Arg of perigee:    67.0187 deg
Mean anomaly:     293.0979 deg
Mean motion:   15.70856366 rev/day
Decay rate:     4.8706e-04 rev/day^2
Epoch rev:           47748

Satellite: MIR
Catalog number: 16609
Epoch time:      90248.72344750
Element set:     910
Inclination:       51.6125 deg
RA of node:       283.8097 deg
Eccentricity:    0.0023995
Arg of perigee:   342.2417 deg
```

```
Mean anomaly:      17.7736 deg
Mean motion:   15.61017685 rev/day
Decay rate:     2.1031e-04 rev/day^2
Epoch rev:           26069

Satellite: HUBBLE
Catalog number: 20580
Epoch time:      90248.90482313
Element set:     200
Inclination:       28.4707 deg
RA of node:        95.9330 deg
Eccentricity:    0.0006149
Arg of perigee:   243.4134 deg
Mean anomaly:     116.5621 deg
Mean motion:   14.84834012 rev/day
Decay rate:    -8.0583e-04 rev/day^2
Epoch rev:            1998

Satellite: BADR-1
Catalog number: 20685
Epoch time:      90248.53120415
Element set:      63
Inclination:       28.4982 deg
RA of node:       326.3886 deg
Eccentricity:    0.0467875
Arg of perigee:   317.3975 deg
Mean anomaly:      39.1627 deg
Mean motion:   15.14230368 rev/day
Decay rate:     2.2783e-03 rev/day^2
Epoch rev:             775
/EX
SB ALL @ AMSAT $ORBS-251.W
Orbital Elements 251.WEATHER

HR AMSAT ORBITAL ELEMENTS FOR WEATHER SATELLITES
FROM N3FKV HEWITT, TX  SEPTEMBER 8, 1990
TO ALL RADIO AMATEURS BT

Satellite: NOAA-9
Catalog number: 15427
Epoch time:      90247.24002597
Element set:     621
Inclination:       99.1723 deg
RA of node:       248.9243 deg
Eccentricity:    0.0015720
Arg of perigee:   144.1460 deg
Mean anomaly:     216.0760 deg
Mean motion:   14.12656946 rev/day
Decay rate:       5.30e-06 rev/day^2
Epoch rev:           29514

Satellite: NOAA-10
Catalog number: 16969
Epoch time:      90243.40601972
Element set:     463
Inclination:       98.5965 deg
RA of node:       269.6586 deg
Eccentricity:    0.0014614
Arg of perigee:    53.4264 deg
Mean anomaly:     306.8260 deg
Mean motion:   14.23709955 rev/day
Decay rate:       6.83e-06 rev/day^2
Epoch rev:           20531
```

```
Satellite: MET-2/16
Catalog number: 18312
Epoch time:      90248.44941878
Element set:     488
Inclination:       82.5456 deg
RA of node:       226.6566 deg
Eccentricity:    0.0014976
Arg of perigee:    28.2080 deg
Mean anomaly:     331.9887 deg
Mean motion:   13.83671583 rev/day
Decay rate:       2.19e-06 rev/day^2
Epoch rev:           15408

Satellite: MET-2/17
Catalog number: 18820
Epoch time:      90243.87015611
Element set:     353
Inclination:       82.5444 deg
RA of node:       290.2998 deg
Eccentricity:    0.0018108
Arg of perigee:   110.0006 deg
Mean anomaly:     250.3106 deg
Mean motion:   13.84368061 rev/day
Decay rate:       2.34e-06 rev/day^2
Epoch rev:           13065

Satellite: MET-3/2
Catalog number: 19336
Epoch time:      90246.44585206
Element set:     571
Inclination:       82.5433 deg
RA of node:       222.0444 deg
Eccentricity:    0.0019030
Arg of perigee:   116.6918 deg
Mean anomaly:     243.6133 deg
Mean motion:   13.16903609 rev/day
Decay rate:       3.92e-06 rev/day^2
Epoch rev:           10125

Satellite: NOAA-11
Catalog number: 19531
Epoch time:      90248.25933199
Element set:     345
Inclination:       98.9878 deg
RA of node:       196.6780 deg
Eccentricity:    0.0013072
Arg of perigee:    61.2501 deg
Mean anomaly:     298.9986 deg
Mean motion:   14.11698208 rev/day
Decay rate:       7.43e-06 rev/day^2
Epoch rev:           10026

Satellite: MET-2/18
Catalog number: 19851
Epoch time:      90249.06698872
Element set:     306
Inclination:       82.5297 deg
RA of node:       164.0311 deg
Eccentricity:    0.0014997
Arg of perigee:   132.0536 deg
Mean anomaly:     228.2043 deg
Mean motion:   13.83997909 rev/day
Decay rate:      -1.22e-06 rev/day^2
Epoch rev:            7675
```

```
Satellite: MET-3/3
Catalog number: 20305
Epoch time:      90246.83938007
Element set:     210
Inclination:       82.5564 deg
RA of node:       162.5367 deg
Eccentricity:    0.0017436
Arg of perigee:   128.9419 deg
Mean anomaly:     231.3248 deg
Mean motion:   13.15862065 rev/day
Decay rate:      -4.30e-07 rev/day^2
Epoch rev:            4129

Satellite: MET-2/19
Catalog number: 20670
Epoch time:      90243.41969962
Element set:      49
Inclination:       82.5422 deg
RA of node:       228.9395 deg
Eccentricity:    0.0017832
Arg of perigee:    77.0314 deg
Mean anomaly:     283.2836 deg
Mean motion:   13.83846103 rev/day
Decay rate:       1.09e-06 rev/day^2
Epoch rev:             892
/EX


Tad Cook
Seattle, WA
Packet: KT7H @ N7HFZ.WA.USA.NA
Phone: 206/527-4089
MCI Mail: 3288544
Telex: 6503288544 MCI UW
USENET:...uw-beaver!sumax!amc-gw!ssc!tad
or, tad@ssc.UUCP
```